

A New Cyprinid Fish, *Hampala salweenensis*, from the Mae Pai River System, Salween Basin, Thailand

Atsushi Doi and Yasuhiko Taki

Laboratory of Ichthyology, Tokyo University of Fisheries, 4-5-7 Konan, Minato-ku, Tokyo 108, Japan

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Abstract A new cyprinid fish, *Hampala salweenensis*, is described from three specimens collected from the Mae Pai River system, Mae Hong Son, northwestern Thailand. The species is distinguishable from its congeners by the combination of the following characters: total lateral line scales 26-27; two roundish black blotches on body side; upper and lower edges of caudal fin with a black marginal band.

The cyprinid genus *Hampala* Bleeker, 1859-1860 has been known to be represented by five species all occurring in Southeast Asia, i.e., *Hampala macrolepidota* (Valenciennes, 1842 in Cuvier and Valenciennes, 1842; including *H. m. sabana* Inger et Chin, 1962 as a subspecies), *H. ampalong* (Bleeker, 1852), *H. bimaculata* (Popa, 1905), *H. lopezi* Herre, 1924 and *H. dispar* Smith, 1934 (Weber and de Beaufort, 1916; Herre, 1924; Smith, 1945). They are close to each other in external morphological characters but distinguishable primarily by their color patterns.

During our field surveys in Thailand in 1989 and 1991, we obtained three specimens of *Hampala* which resembled insular Southeast Asian *H. ampalong* and *H. bimaculata* in color patterns rather than continental Southeast Asian *H. macrolepidota* and *H. dispar*. Subsequent comparisons with the five known species have warranted the description of a new species.

Methods

Methods for counts and measurements largely followed Hubbs and Lagler (1947). For counting the scale counts above and below the lateral line, the scale immediately in front of the insertion of the dorsal, anal and pelvic fins was counted as one-half. Length of the upper and lower caudal fin lobes was measured as a straight distance from the base of the middle caudal ray to the tip of the upper and lower lobes. Total lateral line scale count was represented by the total number of pored scales. Radiographs were used to count vertebrae. Abdominal vertebrae

were defined as those without haemal spines; the second and third vertebrae were counted separately. The specimens used for the present study belong to the following institutions: California Academy of Sciences (CAS); Institute for Breeding Research, Tokyo University of Agriculture (IBRP); Institute of Taxonomic Zoology, University of Amsterdam (ZMA); Museum of Fisheries, Kasetsart University, Bangkok (KUMF); National Museum of Natural History, Leiden (RMNH); National Science Museum, Tokyo (NSMT); The Natural History Museum, London (NHM).

Hampala salweenensis sp. nov.
(Figs. 1, 2)

Holotype. NSMT-P 35838, 200.6 mm standard length (SL), Mae Surin River (a branch of the Mae Pai River), at Ban Huei Phan, Mae Hong Son, northwestern Thailand, Dec. 1991.

Paratypes. NSMT-P 35839, 127.6 mm SL, locality and data as for the holotype; KUMF 2959, 197.6 mm SL, Mae Pai River, near Mae Hong Son Fisheries Station, Mae Hong Son, northwestern Thailand, 6 Aug. 1989.

Diagnosis. A species of *Hampala* distinguishable from its congeners by the combination of the following characters: lateral line scales 26-27; two roundish black blotches on both body sides, one on flank beneath dorsal fin origin and above lateral line, the other on caudal peduncle crossing lateral line; upper and lower edges of caudal fin with a black marginal band.

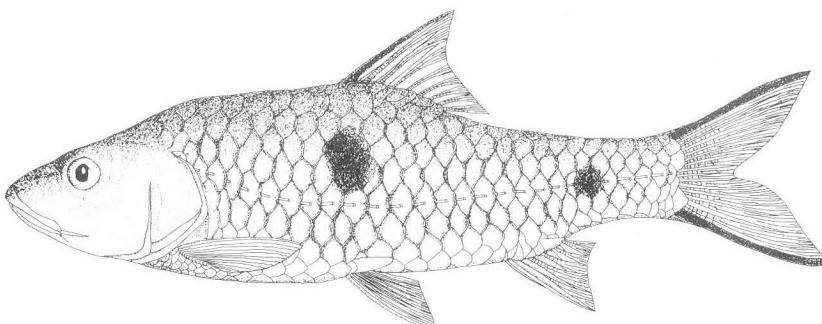


Fig. 1. *Hampala salweenensis* sp. nov., NSMT-P 35838, holotype, 200.6 mm SL, from the Mae Surin River (a branch of the Mae Pai River), at Ban Huei Phan, Mae Hong Son, northwestern Thailand.

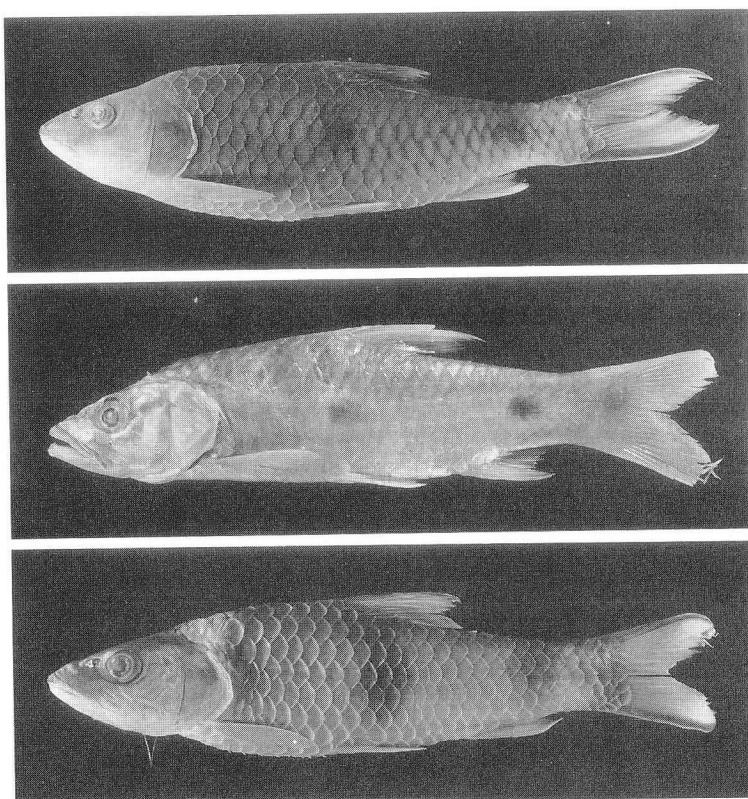


Fig. 2. Above—*Hampala salweenensis* sp. nov., 200.6 mm SL (NSMT-P 35838); middle—*H. ampalong*, 111.5 mm SL (NHM 1866.5.2:112); below—*H. bimaculata*, 152.3 mm SL (NHM 1983.6.20:4).

Description. In the following description, mean values for the three specimen are given first, followed in parenthesis by ranges.

Body moderately compressed; width 17.2% (16.2–17.8%) of SL; greatest depth at origin of dorsal fin ray, 30.5% (29.7–31.6%) of SL. Head large; its length 31.0% (30.8–31.2%) of SL and its depth at

occiput 20.4% (20.4–20.5%) SL. Snout pointed, its length 36.7% (35.6–37.3%) of head length (HL) and slightly dented around nostril region. Eyes situated in dorsal half of head. Orbit diameter 19.7% (17.9–22.9%) of HL. Postorbital length 49.3% (48.0–50.7%) of HL. Interorbital width 34.0% (33.0–34.8%) of HL. Mouth large, deeply

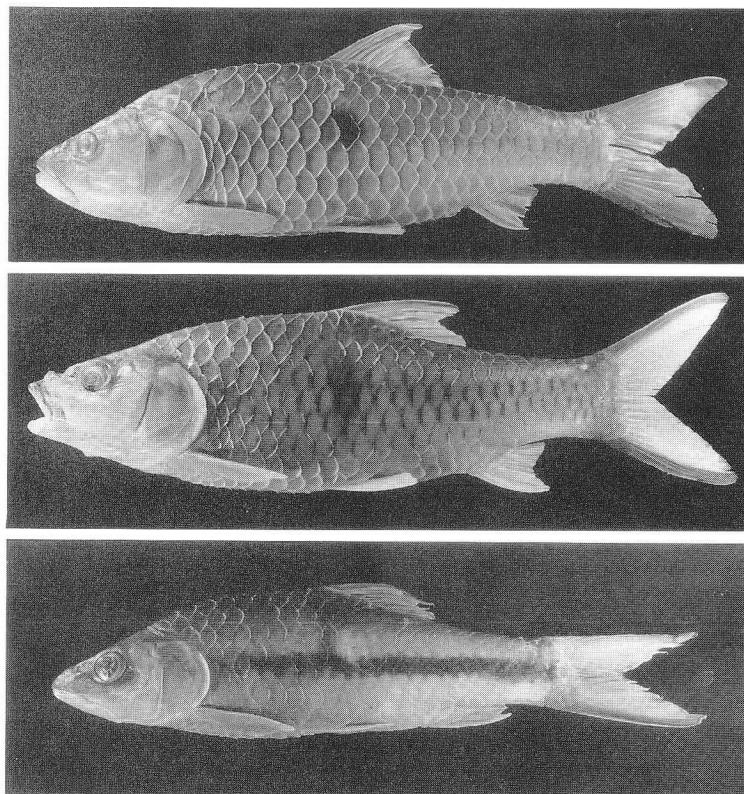


Fig. 3. Above—*Hampala dispar*, 191.8 mm SL (NSMT-P 31975); middle—*H. macrolepidota*, 180.0 mm SL (NSMT-P 35841); below—*H. lopezi*, 100.6 mm SL (CAS 138090).

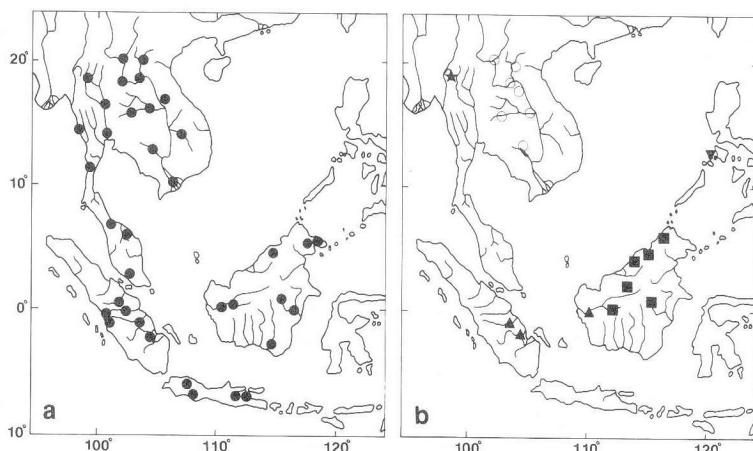


Fig. 4. Geographic distribution of genus *Hampala*. ▲, *H. ampalong*; ■, *H. bimaculata*; ○, *H. dispar*; ▼, *H. lopezi*; ●, *H. macrolepidota*; ★, *H. salweenensis*. Data source from the examined specimens, Day (1876–1878), Weber and Beaufort (1916), Herre (1924), Fowler (1934, 1935, 1937, 1941), Pellegrin and Fang (1940), Smith (1945), Inger and Chin (1962), Taki (1974), Kottelat (1985), Mai and Nguyen (1988) and Roberts (1989).

Table 1. Meristic

	<i>Hampala salweenensis</i>				<i>Hampala ampalong</i>		
	NSNT-P 35838	NSMT-P 35839	KUMF 2959	Mean	Range	Mean	n
Simple dorsal rays	4	4	4	4.0	4	4.0	8
Branched dorsal rays	8	8	8	8.0	8	8.0	8
Simple anal rays	3	3	3	3.0	3	3.0	8
Branched anal rays	5	5	5	5.0	5	5.0	8
Total pectoral rays	15	16	15	15.3	15-17	15.7	9
Total pelvic rays	9	9	9	9.0	9	9.0	9
Lateral line scales	24	24	25	24.3	25-27	26.7	8
Scales on caudal fin	2	2	2	2.0	3-4	3.7	8
Total lateral line scales	26	26	27	26.3	28-31	29.7	8
Predorsal scales	10	10	11	10.3	10	10.0	9
Scales above lateral line to dorsal origin	3.5	4.5	4.5	4.2	4.5	4.5	9
Scales below lateral line to anal origin	3.5	3.5	3.5	3.5	3.5	3.5	9
Scales below lateral line to pelvic insertion	2.5	2.5	2.5	2.5	2.5	2.5	9
Circumpeduncular scales	12	12	12	12.0	12-13	12.3	9
Gill-rakers on upper limb	1	1	2	1.3	1-2	1.7	9
Gill-rakers on lower limb	10	10	10	10.0	9-10	9.3	9
Abdominal vertebrae	17	17	17	17.0	17	17.0	8
Caudal vertebrae	13	13	13	13.0	12-14	13.3	8
Total vertebrae	30	30	30	30.0	29-31	30.3	8

Table 2. Morphometric

	<i>Hampala salweenensis</i>				<i>Hampala ampalong</i>		
	NSMT-P 35838	NSMT-P 35839	KUMF 2959	Mean	Range	Mean	n
Standard length (mm)	200.6	127.6	197.6		79.5-111.5		5
In % of standard length:							
Head length	30.8	30.9	31.2	31.0	30.9-33.4	31.7	5
Head depth at occiput	20.4	20.5	20.4	20.4	19.5-20.7	20.3	5
Body depth	29.7	31.6	30.4	30.5	27.0-32.5	30.6	5
Body width	17.8	17.0	16.7	17.2	15.7-16.9	16.1	3
Caudal peduncle length	18.5	18.8	17.9	18.4	17.2-20.0	18.7	5
Caudal peduncle depth	11.8	13.1	12.9	12.6	12.8-14.9	14.0	5
Predorsal length	53.2	52.9	52.9	53.0	54.7-56.9	55.8	5
Praanal length	76.8	75.7	76.1	76.2	74.3-78.9	75.8	5
Prepelvic length	53.1	53.0	53.0	53.1	51.4-54.2	52.7	5
Last simple dorsal ray	20.5	21.7	—	21.1	22.4-24.8	23.7	5
Length of dorsal fin base	16.2	17.1	17.2	16.8	14.2-16.1	15.1	5
Last simple anal ray	15.7	16.5	14.5	15.6	14.7-16.6	15.9	5
Length of anal fin base	9.8	11.1	10.4	10.4	9.4-10.8	9.4	5
Pectoral fin length	18.4	20.6	17.9	19.0	18.6-20.6	19.8	5
Pelvic fin length	15.3	18.2	16.4	16.6	17.9-19.4	18.3	5
Upper lobe length of caudal fin	29.0	32.6	29.6	30.4	30.5-35.0	33.1	4
Lower lobe length of caudal fin	29.3	31.2	28.7	29.7	31.7-34.1	33.0	3
Head length (mm)	61.8	39.4	61.6		25.5-35.3		5
In % of head length:							
Snout length	37.1	35.6	37.3	36.7	31.8-34.1	32.8	5
Orbit diameter	18.4	22.9	17.9	19.7	22.3-25.7	24.0	5
Postorbital length	50.7	48.0	49.4	49.3	46.3-49.8	48.7	5
Interorbital width	33.0	34.8	34.1	34.0	29.2-30.6	29.9	5
Orbit diameter (mm)	11.4	9.0	11.0		6.0-7.9		5
In % of orbit diameter:							
Maxillary barbel length	81.9	108.9	52.7	81.2	73.5-100.0	82.8	5

A New Cyprinid from Thailand

characters of six *Hampala* species

<i>Hampala bimaculata</i>			<i>Hampala dispar</i>			<i>Hampala lopezi</i>			<i>Hampala macrolepidota</i>		
Range	Mean	n	Range	Mean	n	Range	Mean	n	Range	Mean	n
3-5	3.9	15	4	4.0	7	4	4.0	5	4	4.0	15
8	8.0	15	8	8.0	7	8	8.0	5	8	8.0	15
2-4	3.1	15	3-4	3.1	7	3	3.0	5	3	3.0	15
5	5.0	15	5	5.0	7	5	5.0	5	5	5.0	15
14-16	14.9	15	13-15	14.0	7	14-15	15.2	5	14-16	15.0	15
9	9.0	16	9	9.0	7	9	9.0	5	9	9.0	15
23-26	25.1	16	25	25.0	7	23-24	23.8	5	25-27	25.9	13
2	2.0	16	2	2.0	7	2	2.0	5	2-3	2.3	13
25-28	27.1	18	27	27.0	7	25-26	25.8	5	27-29	28.2	13
9-10	9.6	14	10	10.0	5	9-10	9.2	5	9-11	10.0	16
4.5	4.5	16	4.5	4.5	7	4.5	4.5	5	4.5	4.5	16
3.5-4.5	3.8	16	3.5-4.5	3.9	7	3.5	3.5	5	3.5-4.5	3.8	15
2.5-3.5	2.6	16	2.5-3.5	2.6	7	2.5	2.5	5	2.5-3.5	2.6	16
12	12.0	16	12	12.0	7	12	12.0	5	12	12.0	15
1-2	1.9	12	1-3	1.4	7	1-2	1.8	5	1-2	1.4	14
9-11	9.6	12	7-10	8.6	7	8-10	9.0	5	8-9	8.4	14
17-18	17.1	16	17-18	17.2	6	17-18	17.2	5	16-18	17.1	16
12-13	12.9	16	12-13	12.8	6	12-13	12.6	5	12-13	12.9	16
29-31	30.0	16	30	30.0	6	29-20	29.8	5	29-30	29.4	16

characters of six *Hampala* species

<i>Hampala bimaculata</i>			<i>Hampala dispar</i>			<i>Hampala lopezi</i>			<i>Hampala macrolepidota</i>		
Range	Mean	n	Range	Mean	n	Range	Mean	n	Range	Mean	n
88.3-247.0		8	100.4-191.8		7	100.6-189.7		2	71.8-244.6		10
28.8- 33.5	30.9	8	29.1- 32.0	30.6	7	31.7- 34.8	33.2	2	30.3- 34.3	32.1	10
18.5- 19.3	19.0	8	19.3- 21.6	20.2	7	20.3- 20.5	20.4	2	18.5- 22.3	20.5	10
25.3- 30.0	27.5	8	29.7- 33.8	31.5	6	26.5- 29.6	28.5	2	29.6- 34.4	31.7	8
16.4- 17.4	16.8	4	15.7- 17.7	16.5	5	16.3- 17.1	16.7	2	14.3- 17.7	15.7	6
16.3- 18.9	17.9	8	17.2- 18.9	18.2	6	17.1- 17.9	17.5	2	16.7- 19.1	17.9	10
11.6- 13.0	12.3	8	12.7- 14.1	13.3	7	12.4- 13.4	12.9	2	13.0- 14.3	13.5	10
53.5- 55.1	54.2	8	52.1- 55.9	54.1	7	54.7- 55.7	55.2	2	53.4- 55.8	54.7	10
72.1- 76.3	75.1	8	76.2- 77.3	76.8	7	75.3- 78.6	77.0	2	74.2- 77.7	75.8	10
48.5- 54.7	52.1	8	52.2- 54.2	52.7	7	51.5- 56.0	53.7	2	51.2- 55.3	53.2	10
20.5- 25.8	23.1	8	18.4- 22.0	19.8	7	19.0- 21.6	20.3	2	20.9- 23.8	22.2	9
14.0- 15.9	15.0	8	14.1- 18.1	15.6	7	16.1- 16.5	16.3	2	14.7- 17.6	16.6	10
16.0- 18.7	17.5	8	11.2- 14.7	12.9	7	14.8- 16.4	15.6	2	14.4- 17.0	15.6	10
9.0- 9.7	9.4	8	8.1- 10.2	9.0	6	9.6- 10.4	10.0	2	9.2- 10.7	10.5	9
18.3- 20.9	19.7	8	16.3- 18.4	17.2	7	17.1- 20.2	18.6	2	17.7- 20.7	18.7	10
16.4- 18.9	17.8	8	14.4- 17.2	16.0	7	15.3- 17.8	16.6	2	16.2- 18.1	17.0	10
27.8- 36.2	32.1	8	27.5- 30.4	28.5	7	30.8- 34.2	32.5	2	31.2- 34.2	32.3	9
28.4- 33.5	30.9	8	25.9- 30.7	27.9	7	29.0- 33.4	31.2	2	26.8- 32.0	30.1	8
25.4- 75.5		8	32.2- 60.9		7	31.9- 65.9		2	24.0- 75.0		10
33.7- 36.5	35.6	8	29.9- 31.7	30.9	7	35.1- 36.1	35.6	2	32.0- 36.9	34.9	10
17.9- 25.6	22.4	8	17.0- 22.4	20.7	7	16.7- 21.9	19.3	2	17.9- 23.3	21.1	10
44.0- 53.2	46.8	8	52.4- 56.7	53.3	7	46.2- 50.1	49.2	2	46.3- 55.3	50.1	10
25.6- 31.7	29.9	8	30.6- 34.7	32.3	6	30.0- 31.4	30.66	2	28.5- 35.3	32.8	10
6.1- 13.5		8	7.0- 10.4		7	7.0- 11.0		2	5.6- 13.7		10
82.0-132.4	111.5	8	32.4- 59.3	46.7	7	98.2-102.1	100.2	2	70.2-100.0	89.4	10

cleft, its corner extending to a vertical line from anterior border of eye. A pair of maxillary barbels present; length of the barbel 81.2% (52.7–108.9%) of orbital diameter.

Dorsal fin size moderate, with four simple rays and eight branched rays. Anal fin with three simple rays and five branched rays. Pectoral fin with pectoral fin rays counts 15.3 (15–16). Pelvic fin with 9 rays. Proximal half of last simple dorsal fin ray osseous, with small denticles, its distal half not osseous, segmented; last simple dorsal fin ray length 21.1% (20.5–21.7%) of SL. Last simple anal fin ray non-osseous, its length 15.6% (14.5–16.5%) of SL. Origin of dorsal fin about midway between tip of snout and base of caudal fin and slightly in advance of insertion of pelvic fins. Predorsal length 53.0% (52.9–53.2%) of SL, prepelvic length 53.1% (53.0–53.1%) of SL and preanal length 76.2% (75.7–76.8%) of SL.

Lateral line complete; decurved downward, running on lower side of trunk and on middle of caudal peduncle. Scales large. Lateral line scales 24.3 (24–25), two scales on caudal fin base. Predorsal scales 10.3 (10–11). Scales above lateral line to dorsal origin 4.2 (3.5–4.5); scales below lateral line to anal origin 3.5; scales below lateral line to pelvic insertion 2.5. Circumpeduncular scales 12.

Gill rakers small, canine-like, coarsely set, number 1.3 (1–2) on upper limb, 10 on lower limb.

Color in alcohol.—Back dark, grayish brown; belly brownish white. Scales with black margin except for abdominal surface. Two large black blotches on both body sides; one on flank (above 9th–10th lateral line scale in NSMT-P 35838; above 10th–11th in NSMT-P 35839 and KUMF 2959), the other on caudal peduncle (on 20th–21st scale in NSMT-P 35838; on 21st–22nd in NSMT-P 35839 and KUMF 2959). Pectoral, pelvic and anal fins pale whitish brown. Frontal edge of dorsal fin black, dorsal fin rays pale black. Upper and lower edges of caudal fin with a black band, caudal fin rays pale black.

Etymology. The name *salweenensis* refers to the distribution of this species, the only member of the genus known from the Salween basin.

Comparison

Of the six species of *Hampala* (Figs. 2 and 3), *H. macrolepidota* has the largest geographic distribu-

tion, encompassing the Indochinese Peninsula, Malay Peninsula and Greater Sunda Islands (Fig. 4a). *H. dispar* and *H. salweenensis* are continental in distribution, but their distributions are confined to small ranges, the middle Mekong for the former and the Salween basin for the latter (Fig. 4b). The distribution of *H. dispar* falls within that of *H. macrolepidota*, whereas *H. salweenensis* is not sympatric with either of these two species, though its range adjoins that of *H. macrolepidota*. *H. ampalong* and *H. bimaculata* are distributed in the Greater Sunda Islands: the former in Sumatra and western Borneo, and the latter in western, northern and eastern Borneo (Fig. 4b). *H. lopezi* has been recorded solely from Busuanga Island, Philippines, an island in the island-chain connecting north Borneo and the Philippine Archipelago (Fig. 4b).

These six species are very similar in meristic and morphometric characters, no character alone clearly distinguishing them from each other unless combined with color patterns (Figs. 2 and 3; Tables 1 and 2).

When the adult coloration of *H. salweenensis* is compared with continental Southeast Asian species, i.e., *H. dispar* and *H. macrolepidota*, *H. salweenensis* approaches *H. macrolepidota* in having black marginal stripes along the upper and lower edges of the caudal fin. However, *H. salweenensis* differs from the two species in having two blotches on the body side, one under the dorsal fin and the other on the caudal peduncle. During the juvenile stage, *H. dispar* and *H. macrolepidota* have an ill-defined cross bands on the caudal peduncle and a thin cross band along the caudal fin base, but these markings disappear with growth (Fowler, 1937; Taki and Kawamoto, 1977). The smallest specimen of *H. macrolepidota* and of *H. dispar* examined in the present study, 71.8 mm SL and 100.4 mm SL respectively, had no markings on the posterior part of the body. *H. dispar* has no distinct marginal bands on the caudal fin throughout its life history.

In addition to the differences in coloration, *H. salweenensis* differs from *H. macrolepidota* in lower limb gill-raker count (10 in the former and 8–9 in the latter), and from *H. dispar* in the length of the last simple anal ray (14.5–16.5% of SL vs. 11.2–14.7% of SL), snout length (35.6–37.3% of HL vs. 29.9–31.7% of HL) and postorbital length (48.0–50.7% of HL vs. 52.4–56.7% of HL).

Hampala salweenensis is similar to the two species from Sunda Islands, i.e., *H. ampalong* and *H. bimac-*

ulata, in having two blotches on the body side. However, *H. salweenensis* has fewer total lateral line scales than *H. ampalang* (26–27 in the former and 28–31 in the latter). Further, the following morphometric characters show differences between *H. salweenensis* and *H. ampalang*: length of last simple dorsal ray (20.5–21.7% of SL vs. 22.4–24.8% of SL), length of lower caudal fin lobe (28.7–31.2% of SL vs. 31.7–34.1% of SL) and snout length (35.6–37.3% of HL vs. 31.8–34.1% of HL). In the description of *H. ampalang*, Weber and de Beaufort (1916) stated that “upper and lower margin of caudal with a faint narrow black streak,” but such a streak was not shown in Bleeker (1852, original description of the species, and 1863–1864), nor was it observed in the specimens examined in the present study.

The color patterns of *H. salweenensis* and *H. bimaculata*, although agreeing in possessing two blotches on the body side, differ in the shape and position of the blotches. The blotches in *H. bimaculata* are saddle-shaped, which are forming a circular blotch on each side in large specimens. The anterior blotch is situated beneath the dorsal fin origin (above 10th–11th or less frequently 9th–10th lateral line scales) in *H. salweenensis*, whereas it is positioned below the posterior half of the dorsal fin (on 11th–13th or 12th–14th lateral line scales) in *H. bimaculata*. The two species differ in many proportional characters, i.e. head depth (more than 20.4% of SL in *H. salweenensis* vs. less than 19.3% in *H. bimaculata*), predorsal length (less than 53.2% of SL vs. more than 53.5%), length of the dorsal and anal fin base (more than 16.2% and 9.8% of SL vs. less than 15.9% and 9.7%) and interorbital width (more than 33.0% of HL vs. less than 31.7%).

Hampala lopezi is the only *Hampala* species with a longitudinal band on the body side and is hence readily distinguishable from other species. Further, the following differences were observed between *H. salweenensis* and *H. lopezi*: head length (less than 31.2% of SL in *H. salweenensis* vs. more than 31.7% in *H. lopezi*), predorsal length (less than 53.2% of SL vs. more than 54.7%) and interorbital width (more than 33.0% of HL vs. less than 31.4%).

Comparative Materials

Hampala ampalang RMNH 4968, 1 specimen, 89.2 mm SL, Palembang, Sumatra, date unknown; NHM 1866.5.2:

112, 1, 111.5, East Indian Archipelago; ZMA 120.777, 6, 79.6–125.9, Batang Hari, Djambi, Sumatra, 23 Apr. 1909.

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タイ北西部サルヴィン河水系バーイ川から採集されたコイ科の1新種 *Hampala salweenensis*

土井 敦・多紀保彦

タイ北西部サルヴィン河水系バーイ川から採集された3個体の標本にもとづいて、コイ科の新種 *Hampala salweenensis* を記載した。本種は *Hampala* 属の他種から全側線鱗数 26-27 枚、体側の2つの黒斑の存在、尾鰭上下葉端の黒色バンドの存在の組合せにより識別される。

(〒108 東京都港区港南4-5-7 東京水産大学魚類学研究室)